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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/653,023

09/01/2000

John Oliensis

13701

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7590

08/26/2004

NEC LABORATORIES AMERICA, INC.  
4 INDEPENDENCE WAY  
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EXAMINER

KIBLER, VIRGINIA M

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/653,023

**Applicant(s)**

OLIENSIS, JOHN

**Examiner**

Virginia M Kibler

**Art Unit**

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 18, 20-27 and 29-32 is/are rejected.
- 7) ☒ Claim(s) 19 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment received on 5/26/04 has been entered. Claims 17-32 remain pending.

### ***Claim Objections***

2. Claims 19 and 28 are objected to because of the following informalities: the terms r, q, and A are not defined in claim 19 and the term A is not defined in claim 28. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 17, 18, 20-27, and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliensis ("Structure from Linear or Planar Motion," IEEE 1996) in view of Hartley ("A linear method for reconstruction from lines and points").

Regarding claim 17, Oliensis discloses computing rotational motion in the successive image data using rotational flow vectors derived from tracked points collected from the successive image data (Sect. 2), constructing a shift data matrix for the tracked points that compensates for the rotational motion in the successive image data (Sect. 2), and decomposing the shift data matrix into translational motion matrix (Sect. 2.1-2.2) and

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a structure matrix (Sect. 2.2.1) and recovering the scene structure by solving for the structure matrix (Sect. 2.3.1). Oliensis tracks only points, and does not appear to track lines. However, Hartley discloses that it is known to recover scene structure using lines and points (Abstract; Sect. 3 and 4). Oliensis and Hartley are combinable because they are from the same field of endeavor of scene reconstruction. At the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the tracking of points disclosed by Oliensis to include tracking lines. The motivation for doing so would have been because lines have several advantages including being determined more accurately and line matches can be used in cases where occlusions occur (Sect. 1). Therefore, it would have been obvious to combine Oliensis with Hartley to obtain the invention as specified in claim 17.

Regarding claim 18, the arguments analogous to those presented above for claim 17 are applicable to claim 18. Hartley discloses the set of tracked lines represented by projections in two directions that take into account differences in noise of a measured line in different directions (Sect. 1).

Regarding claim 20, Oliensis discloses the rotation motion is compensated through linear elimination of rotational dependence in the shift data matrix (Sect. 2).

Regarding claim 21, Oliensis discloses the shift data matrix is decomposed using SVD (Sect. 2.2.1).

Regarding claim 22, Oliensis discloses the components of the shift data matrix are weighted to account for greater accuracy of measurement of the components (Sect. 2.2.1-2.2.2).

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Regarding claim 23, Oliensis discloses the method is iterated until it converges to a reconstruction of the scene structure (Sect. 2.2.3).

Regarding claim 24, the arguments analogous to those presented above for claim 17 are applicable to claim 24. Oliensis discloses computing planar homographies between uncalibrated successive image data (Sect. 2.3).

Regarding claims 25 and 26, the arguments analogous to those presented above for claims 21 and 23 are applicable to claims 25 and 26, respectively.

Regarding claim 27, the arguments analogous to those presented above for claims 17 and 18 are applicable to claim 27. Hartley discloses parameterizing a set of tracked lines collected from the successive image data (Sect. 2-3).

Regarding claims 29-32, the arguments analogous to those presented above for claims 20-23 are applicable to claims 29-32, respectively.

#### ***Allowable Subject Matter***

5. Claims 19 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 17-32 have been considered but are moot in view of the new ground of rejection.

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***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Virginia Kibler can be reached on (703) 308-4072. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Virginia Kibler  
08/19/04

MEHRDAD DASTOURI  
PRIMARY EXAMINER

